

# RIO 51™



## WARNING:

1. *Never attempt to swim after a stalled R/C boat.*
2. *Never operate your R/C boat while standing in the water.*
3. *Never operate your R/C boat in the presence of swimmers.*
4. *Always use a Personal Flotation Device (PFD) when boarding and operating your retrieval craft, i.e. Jon boat or duck boat. NOTE: Because of the sharp running hardware included with this R/C boat, we do not recommend using a rubber blow up raft.*
5. *The engine and exhaust system become very hot during operation. Avoid coming in contact with any part of the motor, cooling system or exhaust during or after operation.*
6. *R/C boat running hardware is very sharp. Be very careful when working on and around the metal parts.*
7. *While the engine is running, pay close attention to the propeller. Do not come in contact with the propeller at any time the engine is running or serious injury will result.*
8. *AquaCraft products are to be used by ages 14 and over.*

## ASSEMBLY AND OPERATION MANUAL

**THANK YOU!** Thank you for purchasing the Rio 51! We at AquaCraft know how exciting a new R/C boat purchase can be and we know you're anxious to get started. Please take time first to read this manual carefully and completely before attempting to operate your model. This manual contains the instructions you need to safely operate and maintain your boat. Remember as with any hobby, there is a possibility of injury if this product is misused, so please be careful.

**If for any reason you think that this model is not for you, return it to your local dealer immediately. PLEASE NOTE: Your hobby dealer cannot accept a return on any model after the final assembly sequence has begun.**

## **MANUAL SPECIFICATION & DESCRIPTION CHANGES**

All pictures, descriptions, and specifications found in this instruction manual are subject to change without notice. AquaCraft™ and Fuji-Imvac™ Engines maintain no responsibility for inadvertent errors in this manual.

## **SAFETY PRECAUTIONS**

**Never ever attempt to swim after a stalled R/C boat. Do not get in the water for any reason to retrieve your boat. To aid you in retrieving a stalled R/C boat, set up a fishing reel with a tennis ball tied to the end of the line. Or better yet, get yourself a small Jon boat so you can row out and pick up your boat. Remember to use a PFD (personal flotation device) any time you enter your retrieval craft.**

AquaCraft products are to be used by ages 14 and over.

Do not touch the propeller anytime the engine is running. Pay equally close attention to items such as loose clothing, shirtsleeves, ties, scarves, long hair or anything that may become entangled in the spinning prop. If your fingers, hands, etc. come in contact with the spinning propeller, you may be severely injured.

The speed and mass of this boat can inflict property damage and severe personal injury if a collision occurs. Never run this boat in the presence of swimmers or where the possibility of collision with people or property exists.

Model engines generate considerable heat. Do not touch any part of your engine until it has cooled. Touching the muffler, cylinder head, or exhaust header may result in a serious burn.

This boat is controlled by radio signals, which are susceptible to possible interference from other R/C transmitters, paging systems, or other electrical noise. Before turning your radio transmitter and receiver on, make sure no one else in the area is operating a radio on the same frequency (channel).

Gasoline is poisonous. Do not allow it to come into contact with the eyes or mouth. Always store gasoline in an appropriate labeled container and out of the reach of children!

Gasoline is highly flammable. Keep it away from open flame, excessive heat, sources of sparks, or anything else that might ignite it. Do not smoke or allow anyone else to smoke in close proximity to open gasoline containers. Make sure that gas lines are in good condition so that gasoline will not leak onto a hot engine causing a fire.

Never operate your engine in an enclosed space. Model engines, like automobile engines, exhaust deadly carbon monoxide. Run your engine only in an open area.

R/C models produce vibrations which will cause screws, nuts, bolts, etc, on your model to become loose over time. It is important to make sure that all hardware is secure before operating your model.

In the event that weeds become entangled in the propeller, stop the engine before attempting to remove them.

If your Rio 51 should happen to stall, water currents will slowly carry it to shore. The bad news is that the boat could be carried to the opposite shore. When surveying areas to run your Rio 51, keep variables in mind such as wind direction, size of the lake, etc. It is not advisable to run R/C boats on any free-flowing bodies of water such as creeks or rivers.

It's a good idea to use eye protection when starting and running your Rio 51.

## **SPECIFICATIONS**

### **RIO 51 BOAT SPECIFICATIONS**

51.5" long [130cm]  
57" over all length [145cm]  
13.5" beam [34cm]  
8" tall [21cm]  
13" overall height [33cm]  
13.75 lbs (220oz) [6.372 Kilo]  
26 oz fuel capacity [768cc]  
80 dB operating level  
30 minute run time per tank

### **FUJI-IMVAC BT-28M ENGINE SPECIFICATIONS**

Stroke:	1.182 in [30mm]
Bore:	1.357 in [34.5mm]
Displacement:	28cc (1.7 cubic in)
Horsepower:	3.5
Ignition Style:	Spark
RPM:	10,000
Fuel:	Gasoline/Oil mix 32:1
Weight:	3.2 lb [1450g]

### **RADIO SPECIFICATIONS**

Transmitter:	Tactic™ TTX210 FM with servo reversing and dual rate functions
Receiver:	Tactic TRX310 FM
Servos:	Tactic TSX200 Throttle servo (56 oz-in at 6 volts) Tactic TSX201 Steering servo (90 oz-in at 6 volts)

## WARRANTY SERVICE

AquaCraft will warrant your Rio 51 for 90 days after purchase from defects in materials or workmanship of original manufacture. AquaCraft, at their option, will repair or replace at no charge the incorrectly made part. This warranty does not cover damage caused by crash, abuse, misuse, alteration or accident. To return your boat for repairs you need to provide proof of purchase. Your store receipt or product invoice will suffice.

**IN NO EVENT SHALL THE PURCHASER BE ENTITLED TO ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT.**

This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

### **FUJI-IMVAC ENGINES BT-28M 3-YEAR LIMITED WARRANTY USA AND CANADA**

FJIG0128 BT-28M  
Manufactured by FUJI-IMVAC INC.  
Worldwide Distributor (except Japan): Hobbico, Inc.  
Champaign, IL 61826 USA  
<http://www.fuji-imvac.com>

Fuji-Imvac Engines warrants this engine to be free from defects in materials and workmanship for a period of three (3) years from the date of purchase. During that period, Fuji-Imvac Engines will, at its option, repair or replace without charge any engine deemed defective due to those causes.

The warranty does not cover damage caused by customer disassembly, tampering, use of substandard fuel, use of incorrect accessories (spark plug, prop, etc.), or any use of the engine for which it is not specifically intended. Such uses will automatically void the warranty. If there is damage resulting from these causes within the stated warranty period, Fuji-Imvac Engines will, at its option, repair or replace it for a service charge not greater than 50% of the current manufacturer's suggested retail list price.

For service on your Fuji-Imvac Engines product, either in or out of warranty, please send it post paid and insured to Hobby Services. Along with your engine and proof of purchase date, please include a complete written explanation detailing the problem(s). Please include your name, return address and daytime phone number so that you may be reached if needed.

Outside USA and Canada, contact local importer for warranty information.

Hobby Services  
3002 N. Apollo Drive, Suite 1  
Champaign, Illinois 61822  
Attn: Service Department  
Phone: (217) 398-0007  
9:00 am - 5:00 pm Central Time M-F  
E-mail: [hobbyservices@hobbico.com](mailto:hobbyservices@hobbico.com)

## STANDARD REPAIR SERVICE

After the 90-day warranty has run out, you can still have your Rio 51 repaired for a service fee by the experts at AquaCraft. To speed up the repair process, please follow these four simple steps:

**IMPORTANT NOTE:** For standard repair service you must specify whether you wish the charges to be billed COD or if you wish to be notified of the charges so you can send a check.

1. It is best (recommended) to return the ENTIRE system, boat, radio and engine.
2. Make sure batteries are removed from the transmitter and receiver. Also make sure any gas and oil is drained from the tanks.
3. Send written instructions which include a list of all items returned and a THOROUGH explanation of the problem or problems needing service. Be sure to include your return address and daytime phone number. If you have access to e-mail please provide us with your e-mail address to help speed communication.
4. Send to the address as follows:

Hobby Services  
3002 N. Apollo Drive, Suite 1  
Champaign, Illinois 61822  
Attn: Service Department

## BOAT TERMINOLOGY

**BOW:** The front of the boat.

**STERN:** The back of the boat.

**PORT:** This is the left side of the boat when aboard and facing the front (bow). An easy way to remember this is that port and left both contain four letters.

**STARBOARD:** This is the right side of the boat when aboard and facing the front (bow).

**HULL:** The body of the boat.

**DECK:** The top of the boat.

**TRANSOM:** The back of the boat.

**KEEL:** The center of the bottom of the boat.

**STRAKE:** Lift rail(s) located on the bottom of the boat.

**RUDDER:** The hinged vertical plate mounted at the stern that controls steering.

**STRUT:** The propeller support bracket mounted on the transom of the boat.



## **PREPARING TO OPERATE YOUR RIO 51**

### **SPARK PLUG**

The recommended spark plug is a NGK CMR6A (FJIG7475). To avoid possible engine damage, do not use any other type of spark plugs. The plug gap should be .025" to .030". If the plug gap is incorrect, adjust it with a spark plug gapping tool. This spark plug uses a 5/8" [16mm] spark plug wrench to remove and install the plug.

### **GASOLINE**

Your Fuji-Imvac BT-28M engine requires a 32:1 gasoline to 2-cycle oil mix ratio for best engine performance and sustained engine life.

Follow the mixing direction on the oil container. Always use high-quality oil intended for 2-cycle engines. Prepare only the amount of gasoline oil mix needed. Aged gasoline could damage the engine and cause it to overheat. We find that gasoline mix over 3 months should be discarded and replaced.

Use only low octane, alcohol-free gasoline. The carburetor diaphragm will gradually deteriorate if you use gasoline with alcohol. You will need to replace the diaphragm after about 80 hours of operation if you use gasoline with alcohol.

Gasoline can go bad. Store your gasoline out of the sunlight and in a cool place. Bad gasoline is one of the most difficult problems to diagnose in engines. If you have tried everything you can think of to remedy an engine that is not running correctly, try using some fresh gas/oil mix.

### **BREAKING IN THE ENGINE**

To ensure long life and good performance from your Fuji-Imvac BT-28M Marine engine, you **MUST** break it in properly. To break-in your BT-28M Marine, you need to run the boat for about an hour with a rich needle setting. Patience is important here; the boat will run slowly during the break-in process and the engine's output power will increase gradually over the first few tanks. **Note:** Please do not use a hanging I-V bag style water cooling system for breaking in your engine. It is best to get the boat on the water running to break in your engine.

Do not run at full power (full throttle) for extended periods of time while breaking in your engine. It's best to break in the engine using a variety of throttle settings.

Make sure that the engine has adequate cooling. With the boat in motion, look at the port side of the boat for water spraying out the cooling exit. It's a good idea to get in the habit of looking for water exiting the cooling exit each and every lap.

### **THE FOLLOWING TOOLS ARE REQUIRED (NOT INCLUDED) TO ASSEMBLE AND INSTALL THE BATTERIES IN YOUR RIO 51**

- ☐ 5.5mm Nut Driver (HCAR1112)
- ☐ 7mm Nut Driver (HCAR1116)
- ☐ 3mm Hex Driver (HCAR1156)
- ☐ #2 Phillips Screwdriver (HCAR1024)

- ☐ #2 Slotted Screwdriver (HCAR1002)
- ☐ 10mm Wrench

### **NECESSARY COMPONENTS FOR OPERATING YOUR RIO 51**

- ☐ Small personal retrieval system. This might be as simple as a tennis ball tied to the end of a fishing reel, or a fully equipped AquaCraft Hammer EP RTR (AQUB10\*\*) towing a tennis ball behind a 10 foot line. Better yet, use a small Jon boat and personal flotation device (PFD, preferred!) so you can row out and properly retrieve your boat.
- ☐ Good friend or buddy to help you start and launch the boat. Besides, R/C boating is the most fun when you have a friend with you.
- ☐ 12 "AA" batteries
- ☐ Approved one gallon gasoline fuel can (with standard pump gas)
- ☐ 2-cycle oil
- ☐ Graduated mixing cups (GPMR8056)
- ☐ Small funnel
- ☐ GrimRacer™ 50 weight cable oil (AQUB9550)
- ☐ GrimRacer Speed Grease drive cable lubricant (AQUB9500)

### **EXTRA SUPPLIES YOU MIGHT WANT TO HAVE WITH YOU DURING THE OPERATION OF YOUR RIO 51**

As with any hobby, it is a good idea to assemble a useful collection of tools and accessories to bring along when you head out to the pond. Here are some items you will want to keep handy:

- ☐ Extra "AA" Batteries
- ☐ RX Balloons (AQUB9504)
- ☐ Threadlocking Compound (GPMR6060)
- ☐ Pliers (HCAR0625)
- ☐ Hobby Knife (HCAR0109)
- ☐ Metric hex wrench set (HCAR0521)
- ☐ Stubby Metric hex wrench set
- ☐ 5/8 [16mm] inch spark plug wrench

### **OTHER USEFUL ITEMS TO HAVE ON HAND:**

- ☐ Hobbico Duster™ compressed air (HCAR5500)
- ☐ Waders or rubber boots
- ☐ Paper Towels
- ☐ Spray-On Cleaner
- ☐ Sunglasses
- ☐ Sunblock
- ☐ Folding table
- ☐ Lawn chairs
- ☐ First-Aid kit
- ☐ Cooler with plenty of ice and soda
- ☐ Canopy or shelter

## FINAL ASSEMBLY & OPERATION

Some decals are installed on your boat for you. Extra decals provided in your kit allow you to customize your Rio 51. Simply peel and stick! See the photos on the box for decal placement example.

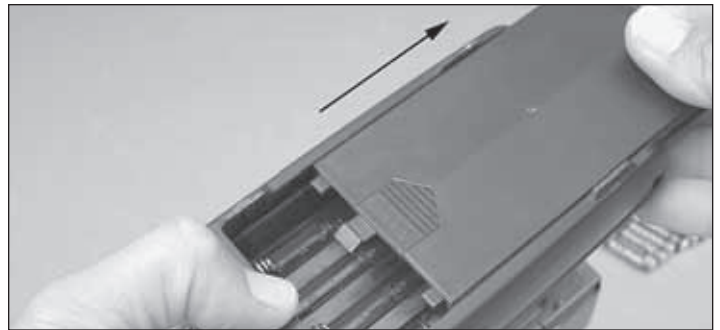
### TRANSMITTER FEATURES

1. ON/OFF Switch
2. Servo Reversing Switches
3. Power Light (LED)
4. Dual Rate Adjustment Knob
5. Steering Trim Knob
6. Throttle Trim Knob
7. Throttle Trigger
8. Steering Wheel



### INSTALLING THE TX BATTERIES

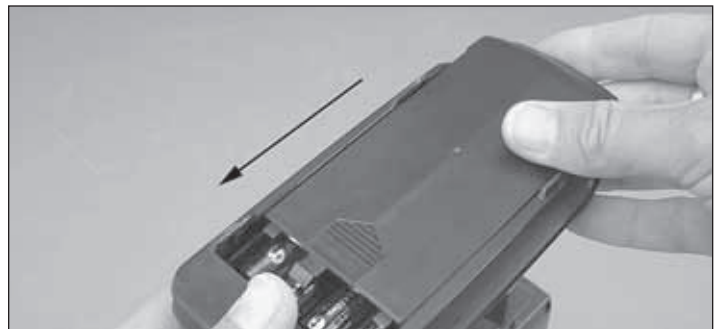
- ☐ 1. Slide off the battery door on the bottom of the transmitter.



- ☐ 2. Install eight (8) fresh "AA" batteries into the bottom of the transmitter in the configuration molded into the battery holder.



- ☐ 3. Reinstall the battery door onto the bottom of the transmitter.



- ❑ 4. Turn the transmitter “ON” using the switch on the transmitter’s left side. The battery level indicator light (LED) should glow red. If the light is flashing, the batteries are low and need to be replaced.

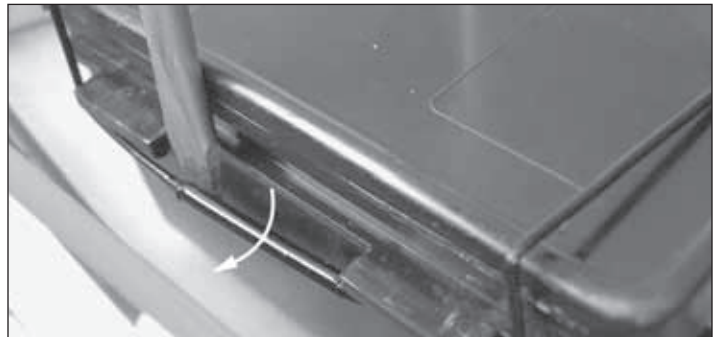


### **INSTALLING THE RX BATTERIES**

- ❑ ❶ 1. Locate the cowl locks at the rear of the hatch. Turn the lock 1/4 turn to remove the hatch.



- ❑ ❷ 2. Using a standard screwdriver, remove the wire radio box lid retainer by gently prying the wire over the holding tabs on the side of the box.



- ❑ ❸ 3. Remove the box lid retainer and set to the side.



- ❑ 4. Slide the receiver antenna into the top of the radio box cover by gently pushing it in place.



- ❑ 5. It is only necessary to push the antenna in to the point it is even with the back side of the cover.



- ❑ 6. Place four (4) new "AA" batteries into the receiver battery holder. Be sure to follow the polarity diagram molded into the battery holder.

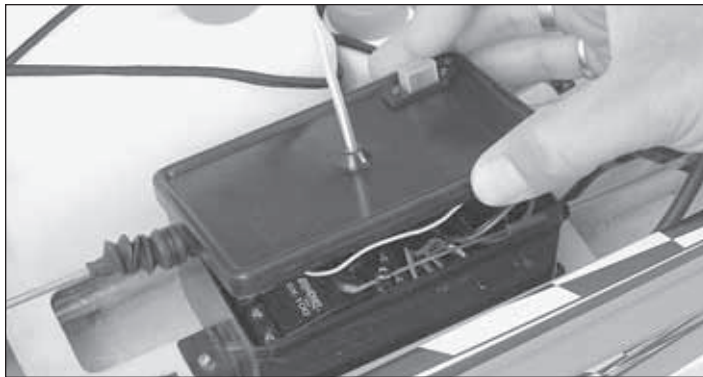


- ❑ 7. Replace the battery holder inside the radio box. Make sure that it will not interfere with any of the control linkages.





- ❑ 8. Replace the radio box cover and radio box lid retainer. Use your screwdriver to install the retainer.

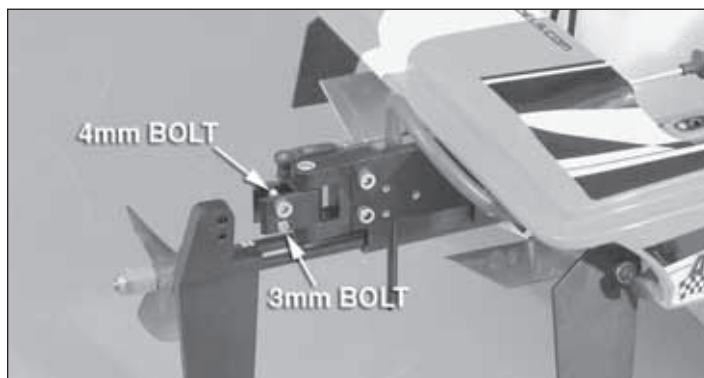


- ❑ 9. Using the screwdriver, carefully pry the retainer over the tabs.

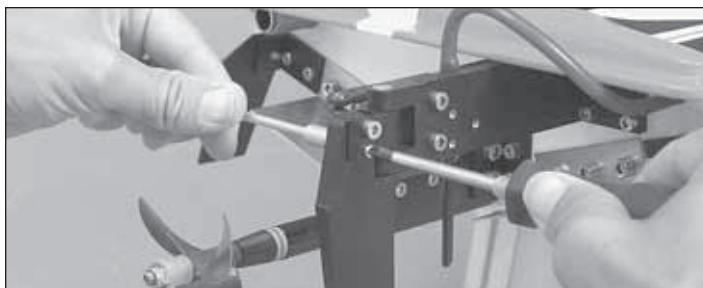


### ***INSTALLING THE RUDDER BLADE***

- ❑ 1. Remove the 3mm and 4mm nuts and bolts from the rudder pivot bracket.



- ❑ 2. Insert the rudder into the rudder control arm assembly as shown. Replace the 4 x 15mm screw and 3 x 15mm screw and secure them with the 4mm and 3mm nuts, respectively.





## CHECK THE RADIO SYSTEM

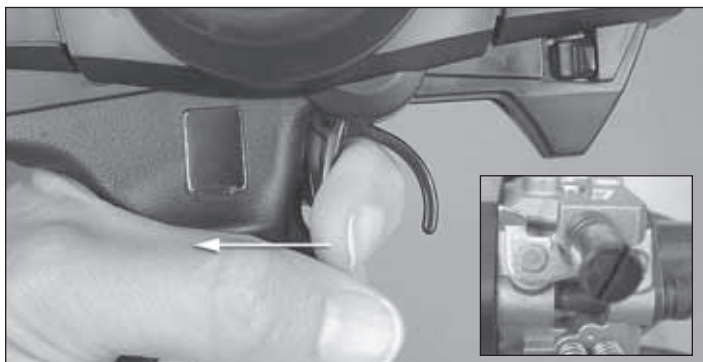
❑ 1. Stand behind the boat with both the transmitter and receiver turned on. Rotate the steering wheel to the left. The back of the rudder should move to the left.



❑ 2. Move the steering wheel to the right. The back rudder should move to the right. If this is not the case, simply move the steering servo reverse switch located on the front of the transmitter (2) to the other position.



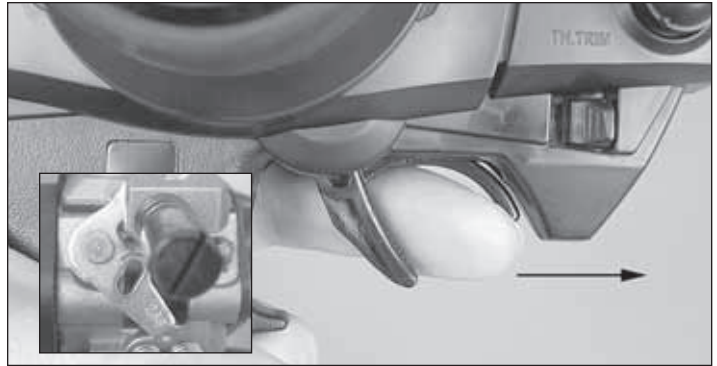
❑ 3. Squeeze the throttle trigger on the transmitter; this should open the throat of the carburetor. This is the proper throttle arm position for full throttle.



❑ 4. Idle position.



- ☐ 5. Off or stop position. If this is not the case, move the steering servo reverse switch located on the front of the transmitter (2) to the other position. Note: You might have to readjust the position of the throttle arm of the throttle servo to properly get the carburetor to match the pictures.

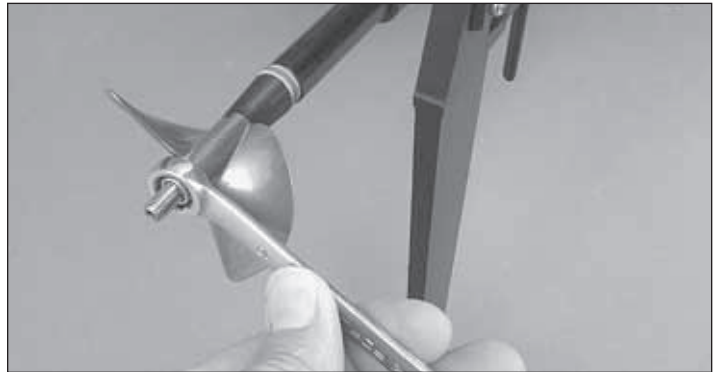


### ***INSTALLING THE PROPELLER***

- ☐ 1. Use a 10mm wrench to remove the prop nut from the stub shaft.



- ☐ 2. Install the propeller on the shaft; replace the nut, making sure it is tight.



- ☐ 3. Assembly is now complete.



## **STARTING THE ENGINE AND LAUNCH PROCEDURE**

There are several simple steps to starting the engine. It is a good idea to have another person hold the boat in place while you start the engine.

### **STARTING PROCEDURE**

**IMPORTANT:** The propeller will begin spinning as soon as the engine starts! Be certain that the propeller is unobstructed; failure to do so will damage the prop.

- ☐ 1. Carefully fill the fuel tank with the appropriate fuel/oil mix.
- ☐ 2. Carefully fill the oil tank with GrimRacer Cable Oil (AQUB9550).
- ☐ 3. Turn on the transmitter and receiver (in that order).
- ☐ 4. Depress the priming bulb until you see fuel enter the clear bulb.
- ☐ 5. Remove the spark plug wire from the top of the spark plug.
- ☐ 6. Close the choke and pull the recoil starter briskly five (5) times.
- ☐ 7. Open the choke and replace the spark plug wire.
- ☐ 8. Open the oil shut off clip.
- ☐ 9. Pull the recoil starter to start the motor.
- ☐ 10. If your engine does not start, repeat the starting procedure, making sure fuel is in the fuel bulb.
- ☐ 11. With the engine started, put the hatch cover back in place. Secure the cowl by pushing down on the cowl locks.  
**BE CAREFUL NOT TO TOUCH THE SPINNING PROP!**

### **TIPS & HINTS FOR DRIVING YOUR RIO 51**

The ST. D/R knob (4) located on the front of the transmitter is the steering dual rate adjustment. Turning the knob increases or decreases the rudder movement. Your Rio 51 does not require a lot of steering movement to allow the boat to turn. Keep this in mind as you learn to drive your boat.

Due to prop rotation, it is the nature of model boats to make smoother right turns than left turns. Unlike full-scale boats, model boats like the Rio 51 race and turn best in a clockwise direction.

Launch the boat in water that is at least 12" deep and free of obstacles. Be sure to stay clear of the spinning prop during the launch. It is best to have a buddy launch your boat for you.

Slowly advance the throttle and note if the boat has a tendency to turn right or left. Adjust the steering trim knob (5) on your transmitter until the boat runs in a straight line when the steering wheel is at neutral.

When finished running, push back on the throttle trigger to stop the engine. Retrieve the boat, remove the cowl, lock the oil shut off clip and turn off the receiver and transmitter (in that order).

Take caution to not overheat the engine. Keep an eye on the water outlet on the port side of the boat. You should see water exiting the outlet when the boat is underway. It is normal for the water to take a few seconds to start flowing after launch.

If your engine should ever become submerged, remove the spark plug and pull the handle of the recoil starter several times until water has been expelled from the engine. Once you are positive that all water has been removed from the engine and the spark plug is completely dry, reinstall the spark plug and perform the starting procedure. This may take several attempts. Make sure you get the engine running again as this will remove any remaining water from the inside of the engine.

Be sure to keep your driveshaft well-lubricated. Failure to do so may cause the cable to break. Remove and re-lubricate the driveshaft after each day of running.

Do not use silicone fuel line as gasoline line. Use vinyl or neoprene rubber gasoline line instead.

Total run time of the Rio 51 is approximately 25 to 35 minutes (assuming you begin with a full tank of fuel). When you notice an increase in power, it means the fuel tank is nearly empty and it's time to head for shore.

Windy conditions cause rough water that will affect the performance of your Rio 51 and increase the chances of capsizing. Take it easy in rough water until you learn to drive the boat.

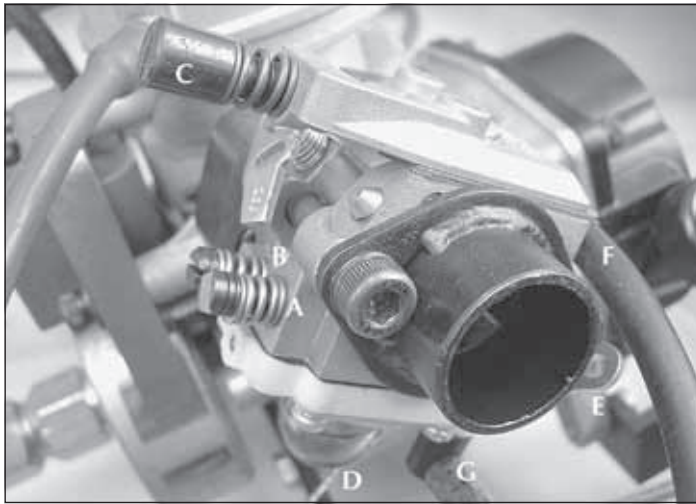
### **ENGINE ADJUSTMENTS**

**WARNING:** Never run an R/C boat engine at full throttle (over rev) with the boat out of the water. Damage can result.

Always make high- and low-speed needle adjustments when the boat is out of the water and the engine not running.

Your Fuji-Imvac BT-28M comes preset from the factory, but due to altitude changes and the fuel you are using, your carburetor might need adjusting.

## Understanding your carburetor and learning how to adjust it:



- A. High-Speed Needle (HSN). The needle located on the right side of the carburetor when viewing the boat from behind.
- B. Low-Speed Needle (LSN). The needle located on the left side of the carburetor.
- C. Idle Adjustment Needle. It is located near the top of the carburetor.
- D. Primer Bulb, located under the carburetor.
- E. Choke lever, located on the front of the carburetor.
- F. Fuel Inlet.
- G. Fuel Return.

It is not necessary to change the needle settings if the engine runs smoothly. Normally only the (A) high-speed needle (A, HSN) will need adjustment from time to time and only by a small amount.

### Factory carburetor settings are:

- A. HSN 1-1/4 turns from the closed position
- B. LSN 2-1/2 turns from the closed position

If you run into problems tuning your engine settings, it is best to re-set the needles to the above settings and start over.

### IDLE STOP ADJUSTMENT

**IMPORTANT:** The idle adjustment needle (C) is set from the factory to allow the boat to shut off when the throttle trigger is pushed back. Do not adjust your idle using the idle adjustment needle located on the motor. You must use the throttle trim knob (#6, TH.TRIM) located on the front of the transmitter to set the idle.

### TROUBLESHOOTING

#### Problem:

The engine hesitates when accelerated rapidly.  
The RPM increases at idling.

#### Solution:

Your (B) LSN is adjusted to lean. Open it up about 1/8th of a turn and try again.

#### Problem:

The idle is not steady.

#### Solution:

Your (B) LSN is adjusted is too rich. Close it 1/8th of a turn and try again.

#### Problem:

Engine stops at full throttle.  
Engine sags when accelerated rapidly.  
Engine sags with the boat at full speed

#### Solution:

Your (A) HSN is too lean. Open it up 1/16th of a turn and try again.

#### Problem:

Your engine does not reach full RPM.  
Carbon build-up appears consistently on your spark plug.

#### Solution:

Your (A) HSN is too rich. Turn it in 1/16th of a turn and try again.

## MAINTAINING THE RIO 51

When you are through operating your boat for the day, be sure to perform these basic maintenance procedures. This will prolong the life of the Rio 51 and help to ensure trouble-free running.

### ENGINE MAINTENANCE AND STORAGE

After a day of running, start your engine and choke it while it is running to get a lot of fuel into the engine. Run it for about 30 seconds, constantly choking the engine. Afterwards it is a good idea to cover the inlet to the carburetor to keep foreign materials out and moisture from entering the motor.

For long term (winter) storage it is a good idea to flood the engine as described above as well as coating the inside of the engine with GrimRacer After Run Oil 8 oz (AQUB9551)

Before transporting your model, remove all of the gasoline from the tank and lines and make sure your oil line shut off clip is locked.

### RADIO BOX MAINTENANCE

When finished running, open the radio box and leave the radio box lid off overnight to allow any water to evaporate.

Should moisture gain access to the radio box, all connections should be dried thoroughly. Hobbico "Duster" Compressed Air (HCAR5500) will provide a blast of air capable of blowing moisture out of connectors.

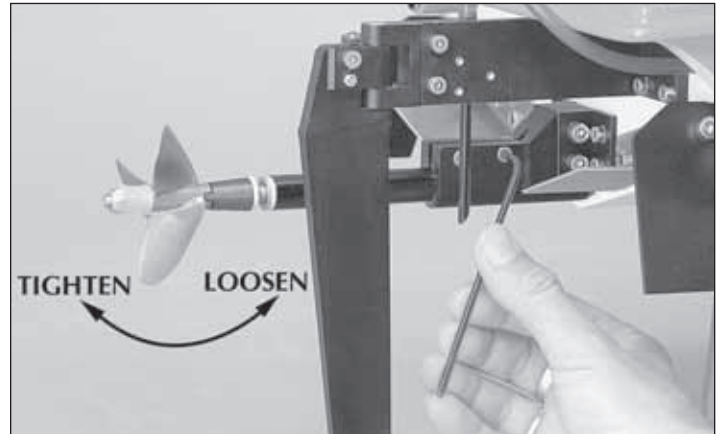


## **BASIC MAINTENANCE**

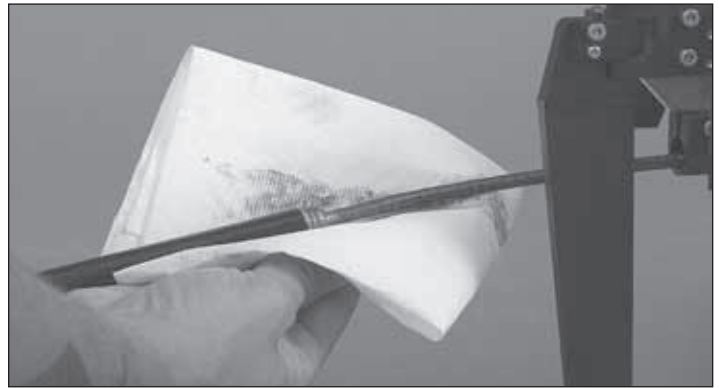
Remove standing water by pulling out the drain plug and draining away any water that might have entered the hull.

Remove the hatch cover. Open the radio box, remove and toss out the old batteries.

Remove the driveshaft by loosening the two 4mm screws from the outer strut housing.



Slide the inner strut assembly with shaft out of the boat. Wipe away any oil and grease.



Re-grease the shaft using GrimRacer Speed Grease. Re-install the shaft and inner strut housing, making sure the two 4mm screws are tight.

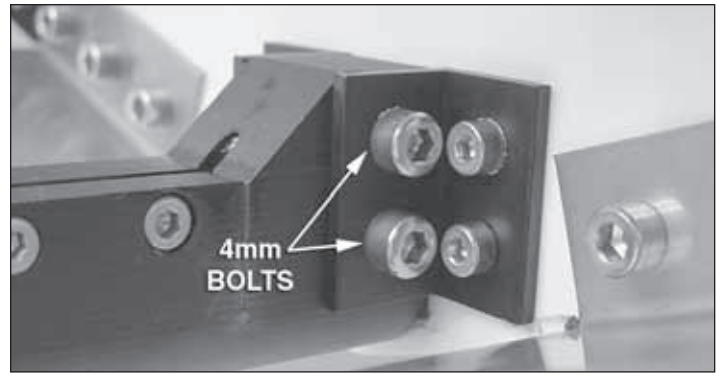


Wipe down the entire boat, inside and out, with spray-on cleaner and a paper towel. If water is in the boat for a week or so, the water vapor will get into the engine, potentially causing the piston ring to rust.

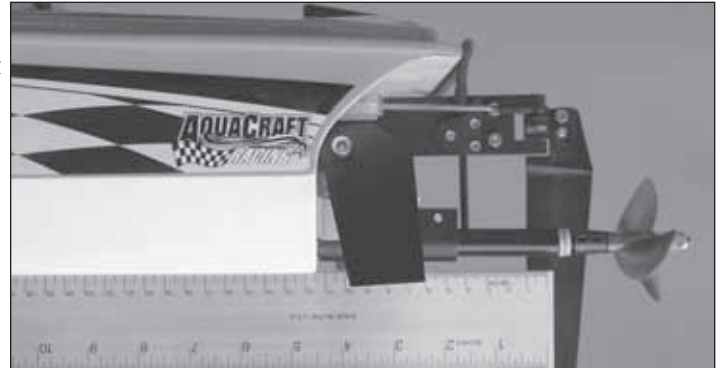
Leave the cowl off the boat overnight to let any water evaporate from the hull.

## HULL TUNING TIPS

As an initial starting point, try running the Rio 51 with a neutral propeller thrust angle. This can be checked by placing a straightedge along the bottom of the hull and checking its relation to the prop shaft. To change the thrust angle use a 4mm Allen wrench to loosen the two large screws on the side of strut mounting brackets. Once loose you can rotate the strut up or down depending on the type of handling you are looking to achieve.



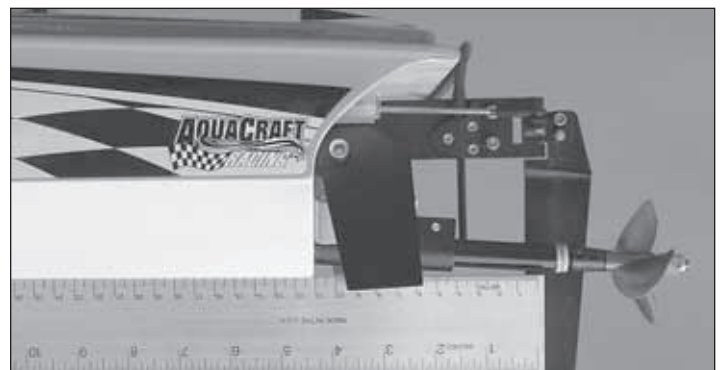
**Neutral Propeller Thrust:** This setting provides thrust without letting it affect the ride attitude of the hull (the bow's tendency to ride up or down).



**Positive Propeller Thrust:** This setting causes the bow to run high. This makes the boat run faster but looser at the same time. In rough water this can cause the boat to blow off (crash by having the bow of the boat lift off the water).

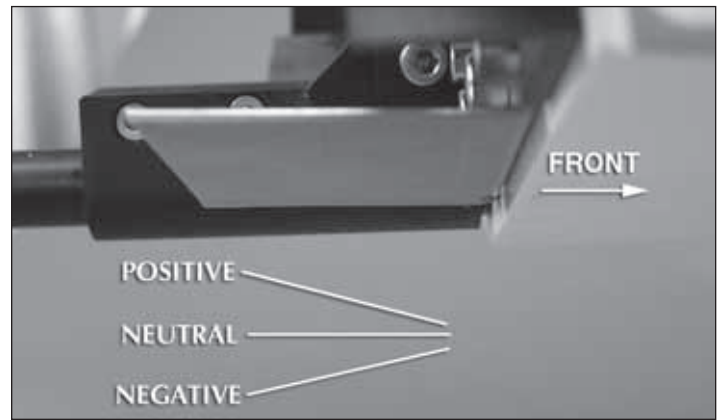


**Negative Propeller Thrust:** Causes the bow to run low (flat on the water). This reduces speed and may cause the boat to stuff (crash by having the boat's bow tuck under water).

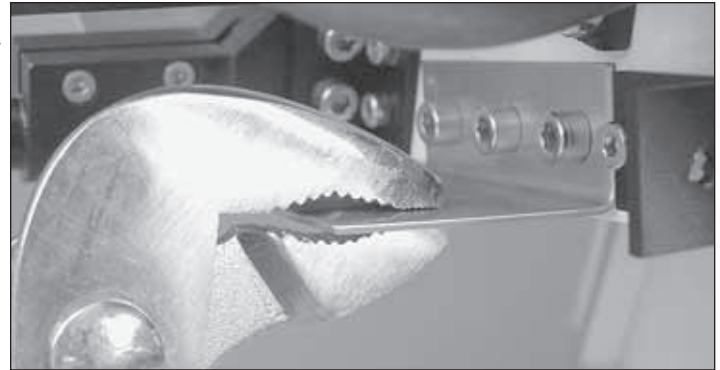


## ***ADJUSTING THE TRIM PLATES***

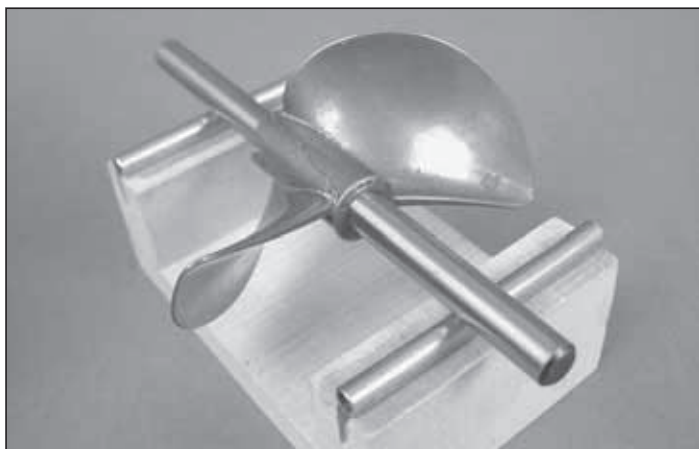
You can also use the trim plates to adjust the ride of the boat. Bending the plates down will help keep the boat from porpoising (the front bouncing up and down). Bending them up will make for a looser (faster) ride but at the same time make the boat unstable. It is best to make small adjustments one at a time.



You can use a large pair of pliers to adjust the trim plates. Remember, just tweak the plates as a very small adjustment can drastically change the way the boat runs.



## BALANCING THE PROPELLER



Always use a balanced prop. An unbalanced prop will cause high levels of vibration that may be harmful to your driveshaft and engine.

**WARNING:** Make sure you use a dust mask anytime you are working on your propeller. Ingesting airborne particles from the propeller is hazardous to your health.

Go to [www.aquacraftmodels.com](http://www.aquacraftmodels.com) to learn more about balancing your propeller.

## RACING YOUR RIO 51

Although it is very enjoyable to run the Rio 51 by yourself or with a buddy, the real fun and excitement of R/C boating is experienced when you get involved in racing. Racing against other boats is much different than running your boat alone. The following suggestions will hopefully provide helpful strategies when racing a model boat.

A good set-up for running alone may not be the best for racing. Race water conditions create challenges different from running alone and water conditions constantly change during a race. Five or six boats racing against one another will create rough water on the race course. To compete successfully, it may be necessary to "tighten" the ride characteristics. This can be accomplished by adjusting the angle of the strut or trim plates.

Wakes caused by other boats can upset the balance and ride characteristics of even a well trimmed model boat. When running down the straight-aways, don't follow in another boat's wake. Wakes generated by other boats while entering and negotiating a corner are especially dangerous. Cutting across a wake when entering a corner can cause the boat to "hook" (spin out).

Racing other boats through a corner may be a competitor's greatest challenge, especially the first corner after the start of a race. The boat entering the corner first has the task of holding its position (often called "holding your lane") through the corner. The following boats must then attempt to hold their lanes, too.

## NATIONAL MODEL BOATING ORGANIZATIONS

There are three national model boating organizations in the United States and Canada:

**APBA or American Power Boat Association**  
(R/C Boat Category)  
[www.apba-rcboating.com](http://www.apba-rcboating.com)

**IMPBA or International Model Power Boat Association**  
[www.impba.net](http://www.impba.net)

**NAMBA or North American Model Boat Association**  
[www.namba.com](http://www.namba.com)

Each of these organizations has its own rules governing model boat racing, sanctioned events and recognized records. Organized model boat racing is offered at both regional and national levels. Location of clubs, race dates and locations, membership applications, and other information can be obtained through their respective web sites.

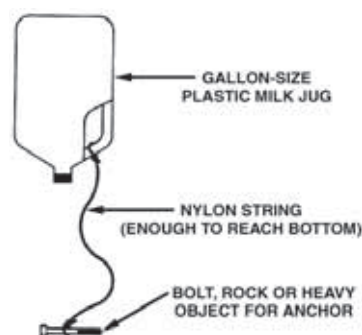
Here are some more good sources of information regarding all aspects of model boat operation:

**International Waters**  
[www.intlwaters.com](http://www.intlwaters.com)

**Jim's RC Boat Dock**  
[www.jrcbd.com](http://www.jrcbd.com)

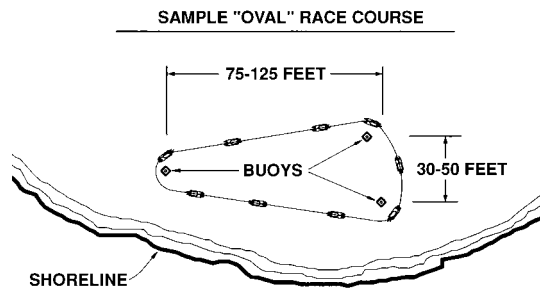
Of course, racing does not have to be an organized and sanctioned competition to be fun. Small informal races can be very exciting without the stress that comes with formal events.

## SUGGESTIONS FOR SETTING UP A SIMPLE RACECOURSE



- Make 2 to 4 simple and inexpensive "marker buoys" with empty milk jugs, string, and heavy objects for anchors, similar to the above sketch.





- Place the buoys similar to the above sketch. Note: The above patterns are not based official standards. You may set up race courses any way you desire, using your imagination to make the races more interesting. Usually, smaller courses will provide more action and excitement.
- The length of the races can be determined by a set number of laps around the buoys (for example, the first boat to complete 6 laps is the winner); or by time (for example, whoever is leading at the end of two minutes is the winner).

***Good Luck and Great Boating!***

## **ORDERING REPLACEMENT PARTS**

To order replacement parts for the AquaCraft Rio 51, use the order numbers in the **Replacement Parts List** that follows. Replacement parts are available only as listed and can be purchased from hobby shops or mail order/Internet order firms. Hardware items (screws, nuts, bolts) are also available from these outlets. If you need assistance locating a dealer to purchase parts, visit **www.hobbico.com** and click on "Where to buy." If this kit is missing parts, contact **Hobbico Product Support**.

### **REPLACEMENT PARTS LIST**

<b>Order #</b>	<b>Description</b>
AQUB6207	Cowl – Blue
AQUB6208	Cowl – Yellow
AQUB6209	Cowl – Red
AQUB6323	Decal Sheet
AQUB6420	Cable Oiler Collar
AQUB6504	Iso Engine Mount
AQUB6905	Fuel Tank w/Cap
AQUB6906	Oil Tank w/Cap
AQUB6907	Oil line Clip
AQUB7767	Prop Nut
AQUB7872	1/4" Flex Cable Propshaft
AQUB7893	1/4" Engine Cable Coupler
AQUB8608	Radio Box
AQUB8609	Radio Box Spring Wire
AQUB8715	Rudder Linkage
AQUB8716	Rudder Throttle Ball Stud
AQUB8717	Rudder Blade
AQUB8718	Rudder Hinge Pin
AQUB8719	Rudder Bracket
AQUB8720	Rudder Arm
AQUB8721	Rudder Transom Bracket
AQUB8722	Rudder Mount Bolt / Nuts
AQUB8804	Strut Thrust Washers
AQUB8806	Strut Housing
AQUB8807	Inner Strut Assembly
AQUB8809	Strut Mounting Brackets
AQUB8851	Switch Mounting Plate
AQUB9000	Throttle Cable Bracket
AQUB9001	Throttle Cable
AQUB9050	Tuned Pipe w/O-rings
AQUB9051	Tuned Pipe Water O-rings
AQUB9250	Water Pick Up Assembly
AQUB9251	Water Pick Up Tube
AQUB9252	Water Pick Up Bracket
AQUB9270	Tank Bungee Cord
AQUB9275	Transom Hardwood Mounting Plates
AQUB9523	Rear View Mirrors
AQUB9524	1/4" Drive Dog
AQUB9525	Water Cooled Manifold 26 to 28cc
AQUB9526	Turn Fin Transom Large
AQUB9527	Turn Fin Mounting Bracket
AQUB9528	Trim Plate SS Large
AQUG5102	Fuji-Imvac BT-28M Exhaust Header
AQUB9785	GrimRacer 65 x 100 2-Blade Metal Prop (Stock)
AQUZ1004	Instruction Manual

#### **Upgrade Components for the Rio 51:**

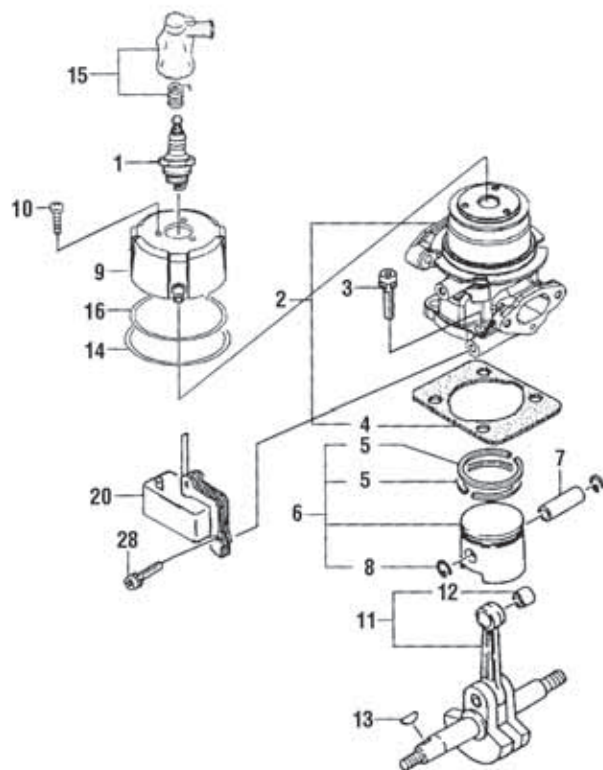
<b>Order #</b>	<b>Description</b>
AQUB9785	GrimRacer 67 x 105 3-Blade Metal Prop
FUTM4350	Receiver Switch
DTXM2011	5-cell Receiver Pack (1400mAh 2 on 3 hump)
DXTP4086	Receiver Pack Charger

# FUJI-IMVAC BT-28 MARINE ENGINE EXPLODED VIEWS

## REPLACEMENT PARTS

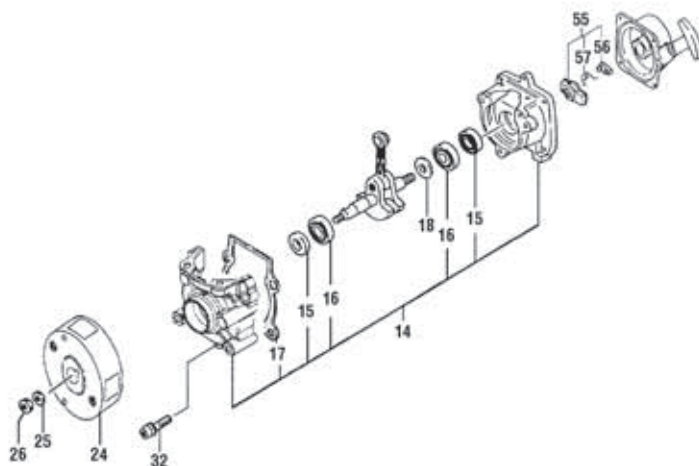
To order replacement parts for the Fuji-Imvac BT-28M, use the order numbers in the **Replacement Parts Lists** that follow. Replacement parts are available only as listed. Replacement parts are not available from Product Support, but can be purchased from hobby shops or mail order/Internet order firms. If you need assistance locating a dealer to purchase parts, visit [www.greatplanes.com](http://www.greatplanes.com) and click on "Where to Buy."

### CYLINDER/PISTON/CRANKSHAFT PARTS LIST

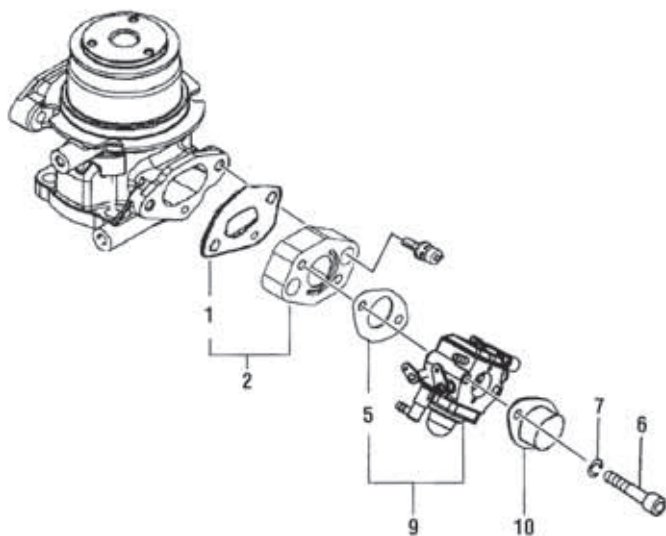


Key #	Description	Stock #
1	Spark Plug NGK CMR6A	FJIG7475
2	Cylinder Set	FJIG4381
3	Hex Bolt 5x18mm/S (4)	FJIG8290
4	Cylinder Gasket	FJIG4291
5	Piston Ring (2)	FJIG6651
6	Piston Set	FJIG6362
7	Piston Pin	FJIG3446
8	Piston Pin Retainer (2)	FJIG6509
9	Water Jacket Complete	FJIG8721
10	Screw 3x8mm	FJIG7160
11	Crankshaft Complete	FJIG4091
12	Needle Bearing F-910 1.4x8.5mm	FJIG6149
13	Woodruff Key 3x13x4.5mm	FJIG7660
14	O-ring G45	FJIG6251
15	Spark Plug Cap Assembly	FJIG7500
16	O-ring G30	FJIG6252
20	Ignition Coil Complete	FJIG7313
28	Hex Bolt 4x18mm/WS (2)	FJIG8220

### CRANKCASE PARTS LIST

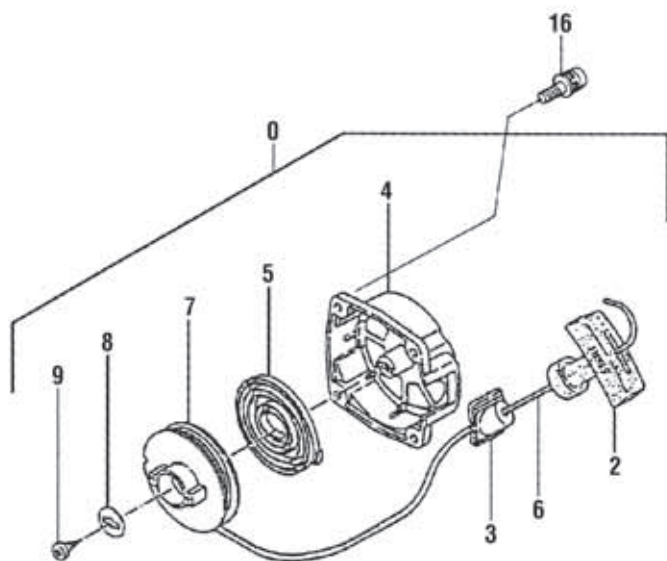


Key #	Description	Stock #
14	Crankcase Assembly BT-28	FJIG3881
15	Oil Seal TB 12227 (2)	FJIG6300
16	Ball Bearing 6001 CE (2)	FJIG3080
17	Crankcase Gasket	FJIG3921
18	Shim 0.2	FJIG7350
18	Shim 0.3	FJIG7380
24	Magneto Rotor 60mm	FJIG5720
25	Washer 8mm	FJIG8680
26	Hex Nut 8mm	FJIG8520
32	Hex Bolt 5x18mm/S (3)	FJIG8290
55	Starter Pulley Assembly	FJIG7139
56	Starter Pawl	FJIG7141
57	Starter Pawl Spring	FJIG7142



### ENGINE PARTS LIST

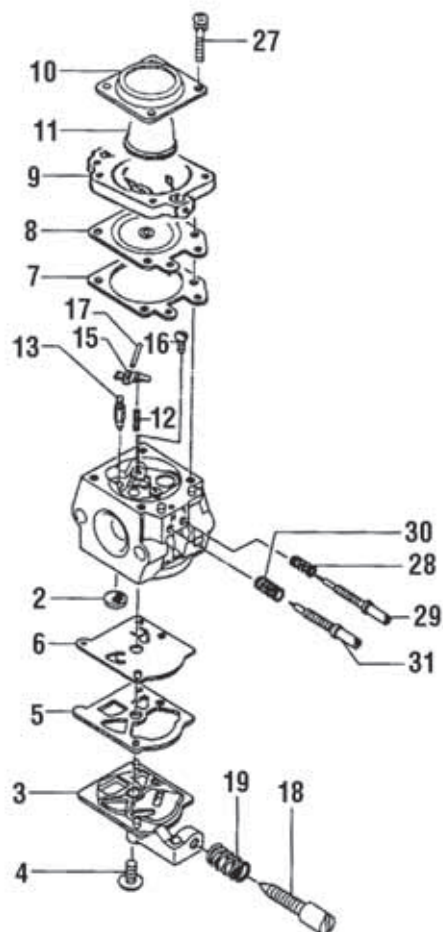
Key #	Description	Stock #
1	Inlet Manifold Gasket	FJIG5481
2	Carburetor Insulator Set	FJIG5501
3	Hex Bolt 4x18mm/WS (2)	FJIG8220
5	Carburetor Gasket	FJIG3111
6	Hex Bolt 5x45mm (2)	FJIG8325
7	Small Washer 5mm (2)	FJIG8605
9	Carburetor Set WT822	FJIG3286
10	Funnel Complete	FJIG7640



### RECOIL STARTER PARTS LIST

Key #	Description	Stock #
0	Recoil Starter Assembly	FJIG7149
2	Starter Handle	FJIG7143
3	Rope Guide	FJIG7144
4	Recoil Starter Body	FJIG7145
5	Recoil Spring	FJIG7146
6	Rope 3.5x90mm	FJIG7147
7	Starter Rope Reel	FJIG7148
8	Rope Reel Washer	FJIG4721
9	Set Screw	FJIG8608
16	Hex Bolt 4x18mm/PS (4)	FJIG8221





## CARBURETOR PARTS LIST

Key #	Description	Stock #
2	Inlet Screen	FJIG5460
3	Pump Body	FJIG6930
4	Set Screw	FJIG7170
5	Pump Gasket	FJIG7060
6	Pump Diaphragm	FJIG7020
7	Diaphragm Gasket	FJIG4610
8	Metering Diaphragm Complete	FJIG5760
9	Air Purge Cover	FJIG3020
10	Diaphragm Cover	FJIG4520
11	Priming Body	FJIG6210
12	Valve Spring	FJIG8525
13	Needle Valve	FJIG6240
15	Valve Hinge	FJIG7540
16	Hinge Pin Set Screw	FJIG5130
17	Hinge Pin	FJIG5100
18	Idle Adjustment Screw	FJIG5220
19	Idle Adjustment Spring	FJIG5285
27	Set Screw (4)	FJIG7161
28	High/Low Adjustment Spring	FJIG5070
29	Low Adjustment Screw	FJIG5590
30	High Adjustment Spring	FJIG5040
31	High Adjustment Screw	FJIG4940

**CHECK OUT THESE OTHER SENSATIONAL AQUACRAFT PRODUCTS!**

## ***SUPERVEE* BRUSHLESS 27**



### ***AquaCraft SuperVee™ 27 RTR***

Combining electric powered, ready-to-run simplicity with innovative GrimRacer parts, AquaCraft's SuperVee 27 is two offshore winners in one: Newcomers can be on the water in as little as ten minutes, and competitors can start racking up victories in FE (Fast Electric) action just as quickly. Available in six colors, the painted, hand-laid fiberglass hull holds all the ingredients for racing success. That includes a brushless B36-56 motor plus a perfectly matched 45 amp brushless 18V ESC – which, like the motor, is water-cooled. The on-board servo and linkage of the included 2-channel radio are factory-installed. And AquaCraft adds many premier accessories from their GrimRacer line: a machined aluminum surface drive strut assembly; adjustable anodized FE rudder; stainless steel FE trim plates; aluminum adjustable turn fin assembly; and innovative cowl lock system, made of durable stainless and spring steel. **AQUB17\*\***

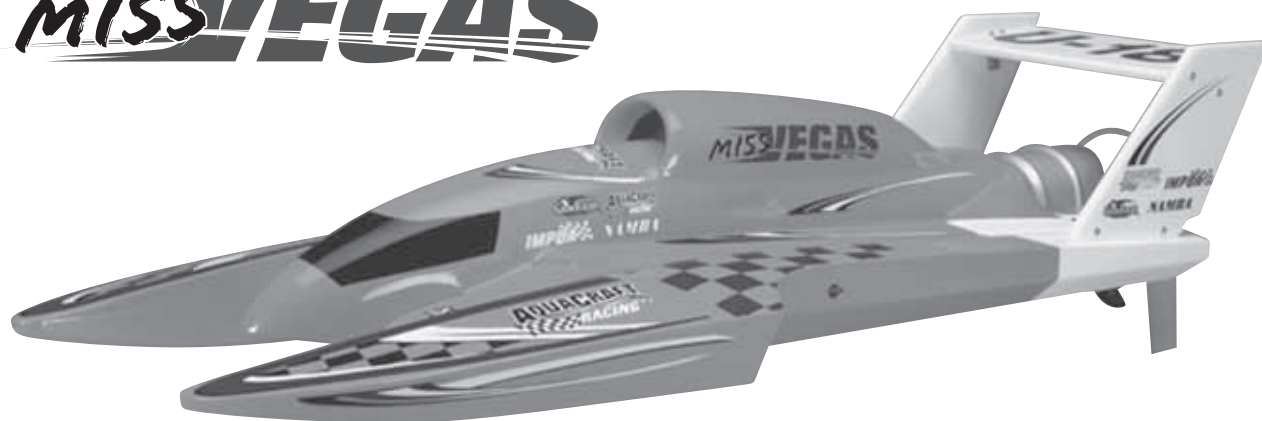
## ***NITRO HAMMER***



### ***AquaCraft Nitro Hammer™ EP RTR***

“Strike hard, strike fast” – that’s the Nitro Hammer’s slogan, but it’s good for this 24" [610mm] electric, too. Batteries are the only thing you need to buy or install; everything else is already covered: assembly, finishing, a display stand and more. Gear for the AquaCraft 2-channel radio is installed, as is a water-cooled 550 motor and ESC w/reverse. Great for all skill levels and available in six exciting colors. Requires a 6- or 7-cell battery, charger and 8 “AA” cells. **AQUB26\*\***

# U-18 MISS VEGAS



## AquaCraft U-18 Miss Vegas™ Nitro RTR

Designer Jerry Dunlap is a 10-time national champion – no wonder the U-18 Miss Vegas RTR is a winner! The pre-painted, 3-color fiberglass hull has flotation, strengthening formers, and plenty of room to make every component easily accessible, including the installed .18 ABC marine engine, tuned pipe, header, and water-cooled head. The on-board gear of the provided 2-channel radio system stays bone-dry inside the molded radio box. Its dual screw-attached lid has a tough rubber seal around the rim and a waterproof ON/OFF switch on the top! To fine-tune handling, adjust the factory-installed strut assembly – it can be angled slightly or moved up and down. The aluminum turn fin and deep-water rudder are strong and lightweight, and a water pick-up in the rudder channels cooling water to the engine head. AquaCraft includes a Y535 2-bladed prop and display/starting stand...just add fuel and radio batteries and you're ready for action! **AQUB32\*\***



## AquaCraft GrimRacer™ Speed Grease Cable Lube

This waterproof blue lubricant – with specially formulated, “non sling” properties – reduces friction and wear on flex cable and direct drive systems in gas, electric and nitro boats. **AQUB9500**



## AquaCraft GrimRacer Cable Oil

Use GrimRacer Cable Oil with the Rio 51's automatic flex cable lubricating system – a nearly effortless way to maintain the drive train a long life of peak performance. **AQUB9550**



## High-Performance Metal Props

Precision cast from  
Copper-Beryllium-Titanium

### The best upgrade for every boat!

Give your boat a new burst of speed....it's as simple as bolting on a high-quality GrimRacer metal prop! Racer-designed, USA-made GrimRacer Copper-Beryllium-Titanium props are now available almost everywhere R/C marine products are sold – making it easier than ever to get the metal prop advantage.

- The most accurately cast metal propellers available.
- Ultra-clean casting and true center-bore hubs mean that each prop is near its balance point – right out of the package
- Material won't crack or shear like plastic – remains sharper longer, with less dulling and chipping, and is safer too!
- Can be fine-tuned, with less effort than stainless steel, while holding shape better for balancing, sharpening, and changing pitch.

For more information and the location of the dealer nearest you, visit our web site at [www.aquacraftmodels.com](http://www.aquacraftmodels.com) or call 1-800-682-8948 and mention code 99K36.

[www.aquacraftmodels.com](http://www.aquacraftmodels.com)

**CAUTION:** Wear eye protection when tuning and working on metal boat propellers. Wear a respirator when filing or sanding these propellers. The dust produced is hazardous to your respiratory health.

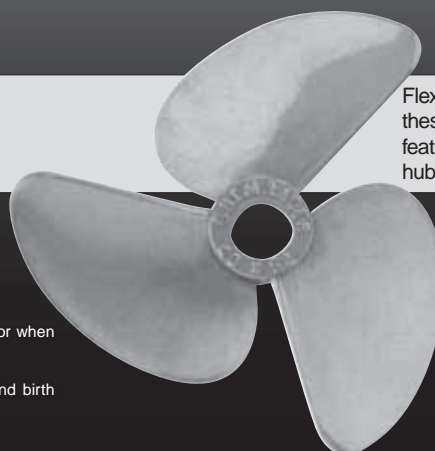
**WARNING:** This product contains a chemical known to the state of California to cause cancer and birth defects or other reproductive harm.



GrimRacer High-Performance Metal prop technology gives an even greater competitive edge to high-performance boats such as the AquaCraft SuperVee 27 and Miss Vegas hydro.



Each prop comes in a reusable plastic parts box to protect it from performance-robbing pit box damage.



Flex-resistant but not brittle, these lightweight metal props feature raised lettering on the hub for easy size identification.